

Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269

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Peachtree City, GA 30269

Scaled data based on original data using  
LM-79-2024 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions

Brand: STREETWORKS

Report Number: P1457962

Luminaire Tested: GLAN-SB3D-930-U-T2LG-HSS

Issue Date: 05/20/2026

**Test Information**

Test Method: LM-79-2024  
Report Number: P1457962  
Test Lab: INNOVATION CENTER(G1)  
Issue Date: 5/22/2026  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: STREETWORKS  
Catalog Number: GLAN-SB3D-930-U-T2LG-HSS  
Description: GALLEON II AREA AND ROADWAY HIGH DENSITY LUMINAIRE 900mA 3xLight Square PACKAGE 90CRI 3000K FIXTURE w/ TYPE II LOW GLARE WITH HOUSE SIDE SHIELD  
Light Source: (78) 3000K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

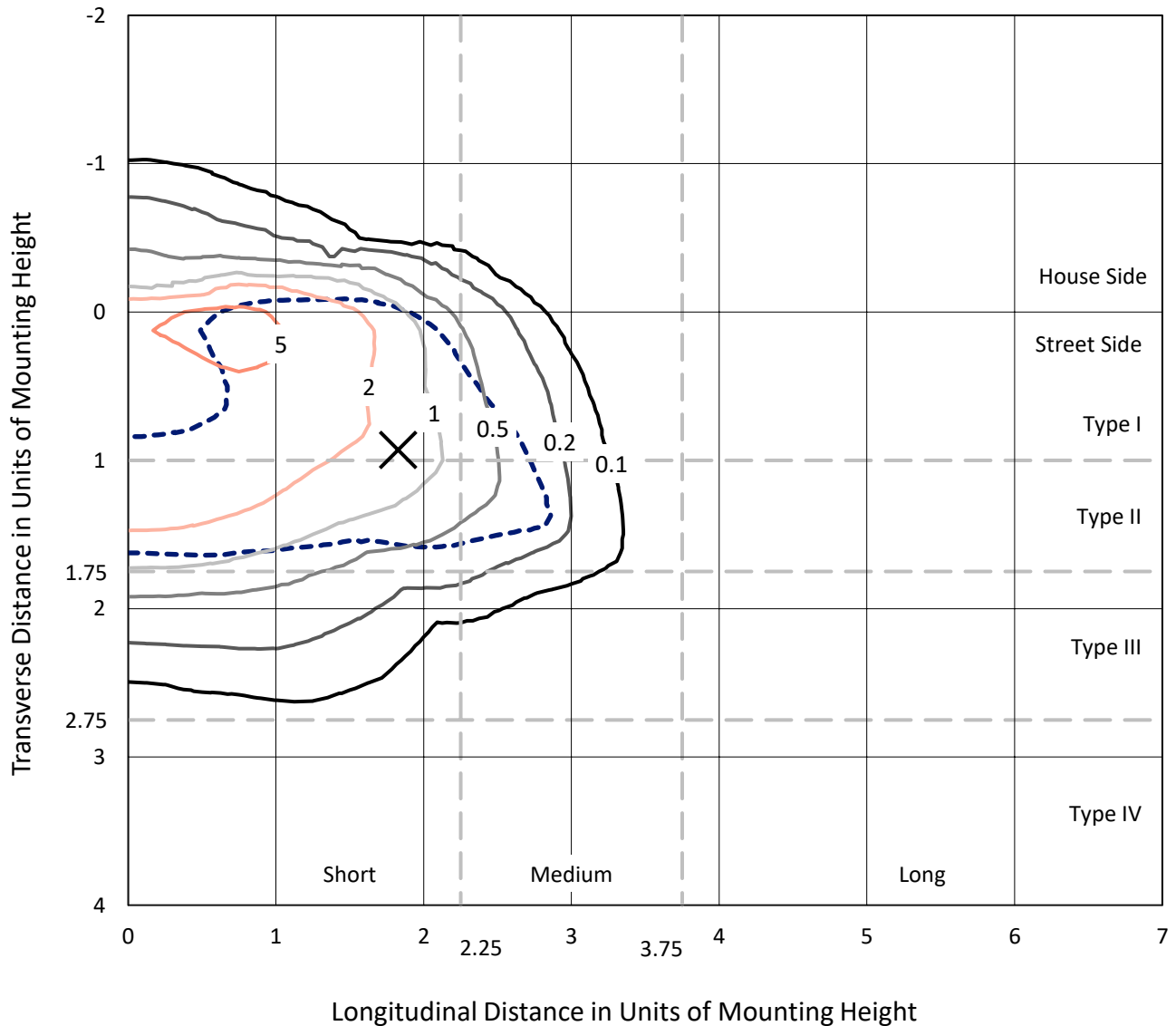
Lumens per Lamp: N/A  
Luminaire Lumens: 15395.5 lumens  
Efficiency: N/A  
Efficacy: 70.6 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 1' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B2 - U0 - G2

Input Watts (W): 218.1  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.97  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT

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### Iso-Footcandle Lines of Horizontal Illumination

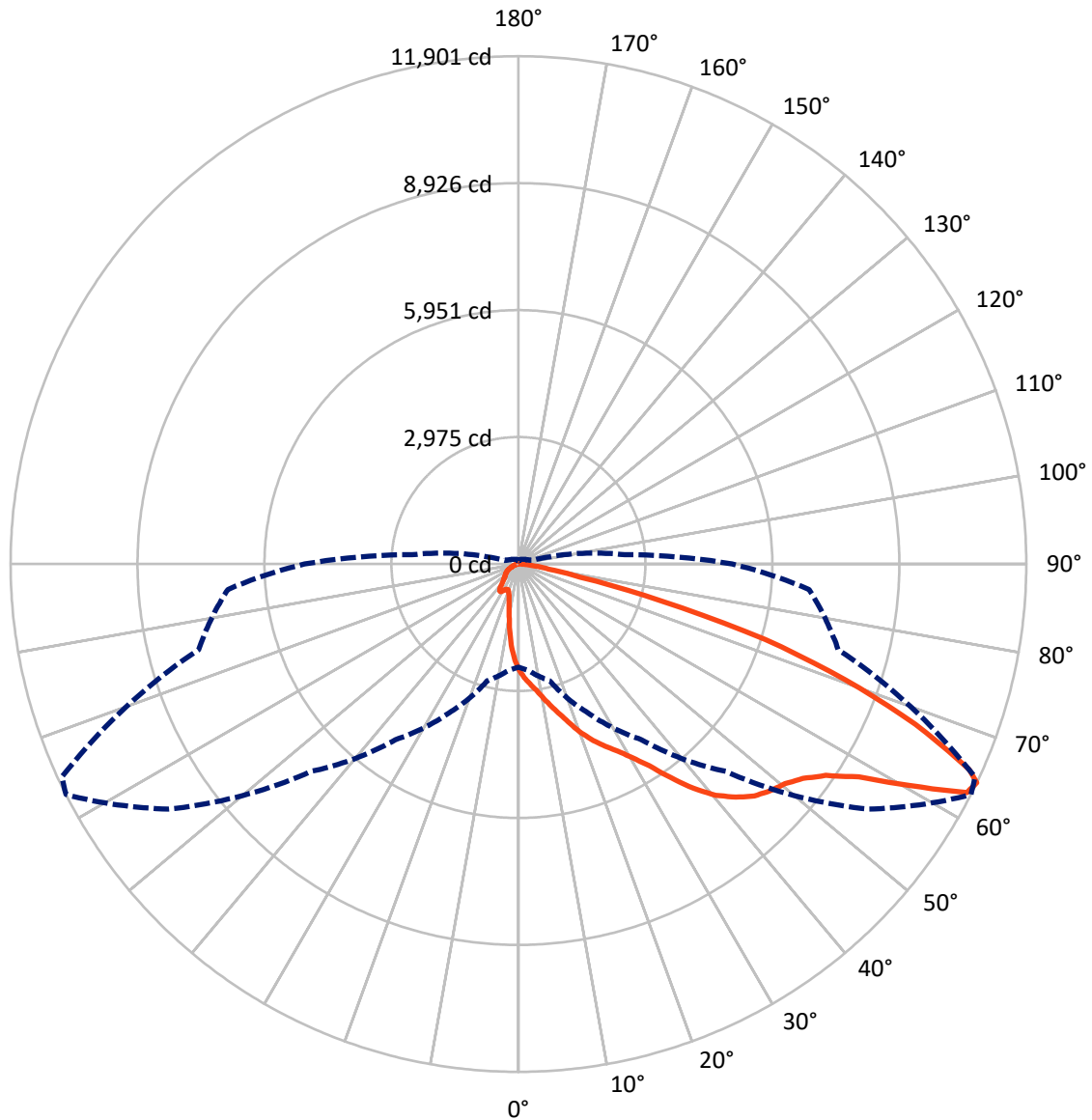
× Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 7.1 fc  
 Type II - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 63-Deg Lateral    - - - Horizontal Cone Through 64-Deg Vertical

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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 1827.0   | 0.0    | 1827.0  |
|                    | % Fixture | 11.9     | 0.0    | 11.9    |
| <b>Street Side</b> | Lumens    | 13568.6  | 0.0    | 13568.6 |
|                    | % Fixture | 88.1     | 0.0    | 88.1    |
| <b>Total</b>       | Lumens    | 15395.5  | 0.0    | 15395.5 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 209.6   | 1.4       |
| 10°-20°   | 589.1   | 3.8       |
| 20°-30°   | 1049.1  | 6.8       |
| 30°-40°   | 2003.8  | 13.0      |
| 40°-50°   | 3321.5  | 21.6      |
| 50°-60°   | 4140.2  | 26.9      |
| 60°-70°   | 3087.2  | 20.1      |
| 70°-80°   | 885.4   | 5.8       |
| 80°-90°   | 109.5   | 0.7       |
| 90°-100°  | 0.0     | 0.0       |
| 100°-110° | 0.0     | 0.0       |
| 110°-120° | 0.0     | 0.0       |
| 120°-130° | 0.0     | 0.0       |
| 130°-140° | 0.0     | 0.0       |
| 140°-150° | 0.0     | 0.0       |
| 150°-160° | 0.0     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| 0°-90°    | 15395.5 | 100.0     |
| 0°-180°   | 15395.5 | 100.0     |



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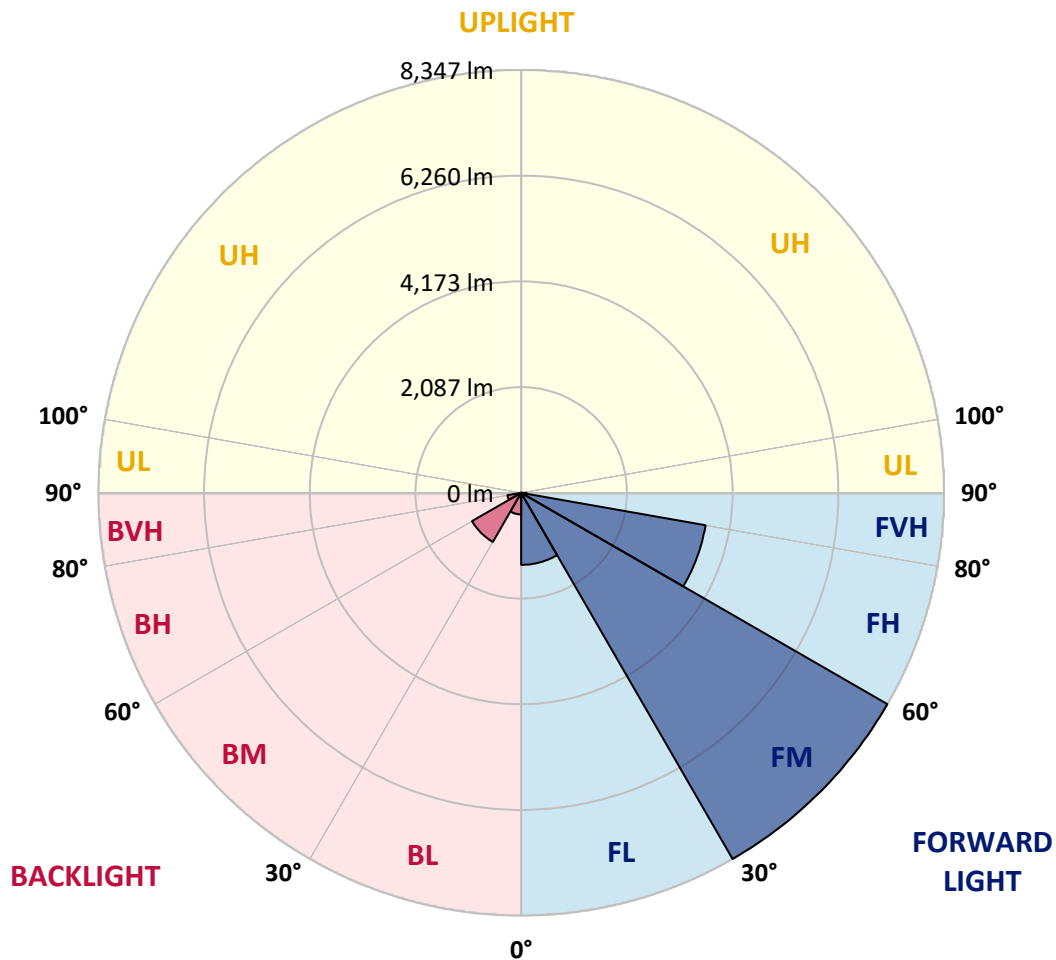
CATALOG NUMBER: GLAN-SB3D-930-U-T2LG-HSS

**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 1421.6 | 9.2       |                         |      |         |
| FM (30°-60°)   | 8346.5 | 54.2      |                         |      |         |
| FH (60°-80°)   | 3696.3 | 24.0      |                         |      | G2/5000 |
| FVH (80°-90°)  | 104.1  | 0.7       |                         |      | G2/225  |
| BL (0°-30°)    | 426.2  | 2.8       | B1/500                  |      |         |
| BM (30°-60°)   | 1119.0 | 7.3       | B2/2500                 |      |         |
| BH (60°-80°)   | 276.3  | 1.8       | B1/500                  |      | G1/500  |
| BVH (80°-90°)  | 5.4    | 0.0       |                         |      | G0/10   |
| UL (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B2-U0-G2**

Type II Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°     | 63°     | 65°     | 75°    | 85°     |
|-------|--------|--------|--------|--------|--------|--------|---------|---------|---------|--------|---------|
| 0°    | 2489.3 | 2489.3 | 2489.3 | 2489.3 | 2489.3 | 2489.3 | 2489.3  | 2489.3  | 2489.3  | 2489.3 | 2489.3  |
| 2.5°  | 2789.5 | 2780.2 | 2771.0 | 2757.1 | 2738.7 | 2720.2 | 2697.1  | 2664.8  | 2650.9  | 2604.7 | 2549.3  |
| 5°    | 2932.6 | 2932.6 | 2928.0 | 2918.8 | 2909.5 | 2891.1 | 2863.4  | 2821.8  | 2803.3  | 2738.7 | 2641.7  |
| 7.5°  | 2969.6 | 2974.2 | 2988.1 | 3006.5 | 3034.2 | 3029.6 | 3029.6  | 2983.4  | 2974.2  | 2904.9 | 2775.6  |
| 10°   | 2904.9 | 2909.5 | 2946.5 | 2997.3 | 3080.4 | 3158.9 | 3214.3  | 3186.6  | 3172.8  | 3103.5 | 2941.9  |
| 12.5° | 2812.6 | 2812.6 | 2872.6 | 2951.1 | 3080.4 | 3228.2 | 3389.8  | 3417.6  | 3422.2  | 3343.7 | 3149.7  |
| 15°   | 2572.4 | 2581.6 | 2678.6 | 2835.6 | 3048.1 | 3279.0 | 3551.5  | 3657.7  | 3685.4  | 3634.6 | 3403.7  |
| 17.5° | 2253.7 | 2263.0 | 2360.0 | 2572.4 | 2891.1 | 3279.0 | 3690.0  | 3934.8  | 3971.8  | 3981.0 | 3727.0  |
| 20°   | 2119.8 | 2119.8 | 2175.2 | 2336.9 | 2669.4 | 3191.3 | 3773.2  | 4230.4  | 4313.5  | 4415.1 | 4082.6  |
| 22.5° | 2138.3 | 2138.3 | 2170.6 | 2263.0 | 2530.8 | 3071.2 | 3824.0  | 4493.6  | 4664.5  | 4923.1 | 4539.8  |
| 25°   | 2239.9 | 2239.9 | 2267.6 | 2327.6 | 2544.7 | 3052.7 | 3921.0  | 4729.2  | 5001.6  | 5491.2 | 5061.7  |
| 27.5° | 2401.5 | 2396.9 | 2420.0 | 2480.0 | 2678.6 | 3140.5 | 4082.6  | 4964.7  | 5269.5  | 6128.5 | 5662.1  |
| 30°   | 2637.1 | 2623.2 | 2632.4 | 2701.7 | 2895.7 | 3343.7 | 4318.1  | 5264.9  | 5574.3  | 6825.9 | 6327.1  |
| 32.5° | 3182.0 | 3177.4 | 3043.5 | 3006.5 | 3214.3 | 3671.6 | 4641.4  | 5639.0  | 5985.3  | 7564.8 | 7010.6  |
| 35°   | 4165.7 | 4230.4 | 4041.0 | 3556.1 | 3597.7 | 4110.3 | 5103.2  | 6147.0  | 6465.6  | 8349.9 | 7754.2  |
| 37.5° | 5163.3 | 5163.3 | 5084.8 | 4512.1 | 4221.1 | 4595.2 | 5602.0  | 6668.8  | 7001.4  | 8982.6 | 8470.0  |
| 40°   | 5953.0 | 5994.6 | 5902.2 | 5472.7 | 5094.0 | 5149.4 | 6100.8  | 7126.1  | 7430.9  | 9370.6 | 8978.0  |
| 42.5° | 6539.5 | 6530.3 | 6493.4 | 6211.6 | 5999.2 | 5874.5 | 6553.4  | 7467.8  | 7758.8  | 9569.2 | 9296.7  |
| 45°   | 7172.2 | 7172.2 | 7121.4 | 6890.5 | 6715.0 | 6608.8 | 6890.5  | 7754.2  | 8059.0  | 9689.2 | 9495.3  |
| 47.5° | 7832.7 | 7823.4 | 7772.6 | 7518.6 | 7329.3 | 7172.2 | 7232.3  | 7938.9  | 8243.7  | 9610.7 | 9527.6  |
| 50°   | 7994.3 | 7985.1 | 8100.5 | 8109.8 | 7938.9 | 7638.7 | 7504.8  | 8095.9  | 8363.8  | 9615.3 | 9629.2  |
| 52.5° | 7805.0 | 7860.4 | 8031.3 | 8239.1 | 8433.0 | 8119.0 | 7795.7  | 8345.3  | 8622.4  | 9744.6 | 9883.2  |
| 55°   | 7333.9 | 7357.0 | 7684.9 | 8017.4 | 8470.0 | 8580.8 | 8262.2  | 8742.5  | 8987.2  | 9869.3 | 10109.5 |
| 57.5° | 6456.4 | 6544.2 | 6895.1 | 7472.4 | 8160.6 | 8622.4 | 9075.0  | 9407.5  | 9592.2  | 9920.1 | 9984.8  |
| 60°   | 4872.3 | 4918.5 | 5680.5 | 6428.7 | 7518.6 | 8289.9 | 9832.4  | 10534.4 | 10511.3 | 9347.5 | 9111.9  |
| 62.5° | 2965.0 | 3006.5 | 3551.5 | 4738.4 | 6110.0 | 7597.1 | 10086.4 | 11795.2 | 11670.5 | 8382.2 | 7671.0  |
| 64°   | 2415.4 | 2493.9 | 2831.0 | 3847.1 | 5024.7 | 6872.1 | 10012.5 | 11901.4 | 11804.4 | 7758.8 | 6835.1  |
| 65°   | 2064.4 | 2170.6 | 2517.0 | 3339.0 | 4271.9 | 6091.6 | 9809.3  | 11605.8 | 11541.2 | 7380.1 | 6142.4  |
| 67.5° | 1297.7 | 1348.5 | 1861.2 | 2595.5 | 2941.9 | 3897.9 | 8433.0  | 10035.6 | 10151.1 | 6576.5 | 4530.6  |
| 70°   | 965.2  | 988.3  | 1279.3 | 2009.0 | 2295.3 | 2267.6 | 5791.4  | 8128.2  | 8155.9  | 5260.3 | 2734.0  |
| 72.5° | 702.0  | 706.6  | 896.0  | 1487.1 | 1796.5 | 1547.1 | 3052.7  | 6040.8  | 5842.2  | 3080.4 | 1491.7  |
| 75°   | 466.4  | 484.9  | 628.1  | 1048.4 | 1399.3 | 1136.1 | 1390.1  | 3440.6  | 3380.6  | 1505.6 | 854.4   |
| 77.5° | 341.8  | 346.4  | 424.9  | 702.0  | 1099.2 | 835.9  | 840.5   | 1482.5  | 1528.7  | 896.0  | 540.3   |
| 80°   | 194.0  | 203.2  | 277.1  | 429.5  | 715.8  | 572.7  | 471.1   | 715.8   | 822.1   | 609.6  | 360.2   |
| 82.5° | 115.5  | 124.7  | 198.6  | 281.7  | 489.5  | 235.5  | 240.2   | 392.6   | 489.5   | 438.7  | 194.0   |
| 85°   | 69.3   | 73.9   | 124.7  | 152.4  | 291.0  | 157.0  | 87.7    | 194.0   | 254.0   | 258.6  | 106.2   |
| 87.5° | 46.2   | 46.2   | 69.3   | 64.7   | 83.1   | 73.9   | 36.9    | 50.8    | 64.7    | 87.7   | 41.6    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0     | 0.0     | 0.0     | 0.0    | 0.0     |



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CATALOG NUMBER: GLAN-SB3D-930-U-T2LG-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 2489.3 | 2489.3 | 2489.3 | 2489.3 | 2489.3 | 2489.3 | 2489.3 | 2489.3 | 2489.3 | 2489.3 | 2489.3 |
| 2.5°  | 2503.1 | 2475.4 | 2392.3 | 2281.4 | 2179.8 | 2101.3 | 2004.3 | 1939.7 | 1879.7 | 1879.7 | 1828.9 |
| 5°    | 2563.2 | 2489.3 | 2286.1 | 2032.1 | 1759.6 | 1501.0 | 1334.7 | 1150.0 | 1089.9 | 1039.1 | 1048.4 |
| 7.5°  | 2664.8 | 2530.8 | 2170.6 | 1713.4 | 1279.3 | 1002.2 | 817.4  | 734.3  | 697.4  | 674.3  | 678.9  |
| 10°   | 2789.5 | 2604.7 | 2032.1 | 1390.1 | 942.1  | 734.3  | 646.6  | 614.2  | 600.4  | 595.8  | 595.8  |
| 12.5° | 2960.3 | 2692.5 | 1893.5 | 1117.6 | 743.5  | 632.7  | 586.5  | 568.1  | 554.2  | 545.0  | 545.0  |
| 15°   | 3163.5 | 2803.3 | 1731.9 | 919.0  | 651.2  | 581.9  | 545.0  | 526.5  | 508.0  | 503.4  | 503.4  |
| 17.5° | 3422.2 | 2918.8 | 1588.7 | 789.7  | 605.0  | 545.0  | 508.0  | 484.9  | 471.1  | 466.4  | 466.4  |
| 20°   | 3708.5 | 3061.9 | 1445.5 | 715.8  | 572.7  | 508.0  | 471.1  | 452.6  | 438.7  | 429.5  | 434.1  |
| 22.5° | 4073.4 | 3242.1 | 1353.2 | 678.9  | 545.0  | 475.7  | 438.7  | 420.3  | 406.4  | 397.2  | 401.8  |
| 25°   | 4475.1 | 3468.4 | 1302.4 | 678.9  | 526.5  | 452.6  | 411.0  | 392.6  | 378.7  | 369.5  | 369.5  |
| 27.5° | 4964.7 | 3722.4 | 1307.0 | 706.6  | 521.9  | 434.1  | 387.9  | 369.5  | 355.6  | 341.8  | 341.8  |
| 30°   | 5505.0 | 4022.6 | 1357.8 | 757.4  | 531.1  | 415.6  | 369.5  | 341.8  | 332.5  | 318.7  | 318.7  |
| 32.5° | 6077.7 | 4368.9 | 1487.1 | 822.1  | 521.9  | 392.6  | 341.8  | 318.7  | 304.8  | 295.6  | 295.6  |
| 35°   | 6682.7 | 4761.5 | 1648.7 | 849.8  | 475.7  | 360.2  | 318.7  | 295.6  | 286.3  | 281.7  | 277.1  |
| 37.5° | 7260.0 | 5103.2 | 1736.5 | 794.4  | 415.6  | 332.5  | 291.0  | 267.9  | 263.2  | 254.0  | 254.0  |
| 40°   | 7708.0 | 5385.0 | 1685.7 | 678.9  | 383.3  | 304.8  | 267.9  | 244.8  | 235.5  | 226.3  | 226.3  |
| 42.5° | 7971.2 | 5486.6 | 1501.0 | 577.3  | 360.2  | 277.1  | 244.8  | 221.7  | 212.4  | 207.8  | 207.8  |
| 45°   | 8123.6 | 5472.7 | 1283.9 | 517.3  | 337.1  | 254.0  | 221.7  | 207.8  | 194.0  | 189.4  | 184.7  |
| 47.5° | 8119.0 | 5329.5 | 1126.9 | 466.4  | 314.0  | 235.5  | 207.8  | 194.0  | 180.1  | 175.5  | 175.5  |
| 50°   | 8086.7 | 5117.1 | 951.4  | 429.5  | 295.6  | 221.7  | 194.0  | 184.7  | 170.9  | 166.3  | 161.6  |
| 52.5° | 8165.2 | 4997.0 | 794.4  | 406.4  | 272.5  | 212.4  | 189.4  | 175.5  | 157.0  | 152.4  | 152.4  |
| 55°   | 8262.2 | 4927.7 | 637.3  | 383.3  | 254.0  | 207.8  | 180.1  | 166.3  | 147.8  | 143.2  | 143.2  |
| 57.5° | 7980.4 | 4664.5 | 526.5  | 346.4  | 230.9  | 198.6  | 170.9  | 161.6  | 143.2  | 129.3  | 129.3  |
| 60°   | 7093.7 | 3856.3 | 434.1  | 304.8  | 212.4  | 184.7  | 161.6  | 147.8  | 129.3  | 110.8  | 110.8  |
| 62.5° | 5768.3 | 2941.9 | 360.2  | 258.6  | 198.6  | 170.9  | 147.8  | 133.9  | 110.8  | 87.7   | 87.7   |
| 64°   | 5010.9 | 2498.5 | 323.3  | 226.3  | 189.4  | 157.0  | 133.9  | 120.1  | 97.0   | 73.9   | 69.3   |
| 65°   | 4493.6 | 2207.6 | 300.2  | 212.4  | 184.7  | 147.8  | 129.3  | 115.5  | 87.7   | 69.3   | 64.7   |
| 67.5° | 3163.5 | 1482.5 | 240.2  | 175.5  | 161.6  | 124.7  | 110.8  | 97.0   | 78.5   | 60.0   | 55.4   |
| 70°   | 1842.7 | 840.5  | 189.4  | 147.8  | 124.7  | 97.0   | 92.4   | 87.7   | 69.3   | 46.2   | 46.2   |
| 72.5° | 1002.2 | 420.3  | 143.2  | 120.1  | 97.0   | 69.3   | 78.5   | 69.3   | 55.4   | 36.9   | 32.3   |
| 75°   | 614.2  | 258.6  | 106.2  | 87.7   | 64.7   | 50.8   | 60.0   | 50.8   | 32.3   | 23.1   | 18.5   |
| 77.5° | 411.0  | 166.3  | 78.5   | 60.0   | 41.6   | 32.3   | 41.6   | 27.7   | 13.9   | 4.6    | 4.6    |
| 80°   | 254.0  | 115.5  | 50.8   | 36.9   | 23.1   | 13.9   | 9.2    | 4.6    | 4.6    | 0.0    | 0.0    |
| 82.5° | 110.8  | 73.9   | 27.7   | 18.5   | 9.2    | 4.6    | 4.6    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 60.0   | 23.1   | 9.2    | 4.6    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 18.5   | 9.2    | 4.6    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

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1121 Highway 74 South  
Peachtree City, GA 30269



LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP1-2407-184-14

Test Date: 10/11/2024

Luminaire Tested: GSS-SB1A-930-U-5WQ

Data in this report applies to families of products including GSS-SB1A-930-U-5WQ

**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-14  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 10/15/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: McGraw-Edison  
 Catalog Number: **GSS-SB1A-930-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 90 CRI 3000K CCT 26 LEDS

**Spectral Parameters**

CCT (K): 2993  
 CIE u': 0.2501  
 CIE v': 0.5245  
 Duv: 0.0021  
 CIE x: 0.4406  
 CIE y: 0.4107  
 CIE z: 0.1487  
 Peak Wavelength (nm): 621  
 Dominant Wavelength (nm): 582  
 Purity: 55.53327  
 Rf: 92.6  
 Rg: 98.5

|           |      |      |      |
|-----------|------|------|------|
| CRI (Ra): | 92.4 |      |      |
| R1:       | 92.2 | R9:  | 58.2 |
| R2:       | 95.2 | R10: | 87.7 |
| R3:       | 97.0 | R11: | 93.5 |
| R4:       | 93.1 | R12: | 81.7 |
| R5:       | 91.7 | R13: | 92.9 |
| R6:       | 94.2 | R14: | 97.6 |
| R7:       | 93.3 | R15: | 88.1 |
| R8:       | 82.3 |      |      |



**Test Conditions**

Stabilization Time: 20M  
 Operation Time: 1H 20M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-14

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 6/18/2024        | 12/18/2024           |
| Power Meter                    | INXT2011004           | 2/8/2024         | 2/8/2025             |
| AC Power Source                | IN0063                | 10/24/2023       | 10/24/2024           |
| DC Power Source                | IN0208                | 10/24/2023       | 10/24/2024           |
| Sphere Thermometer             | IN0085                | 10/24/2023       | 10/24/2024           |
| Room Thermometer               | IN0046                | 10/24/2023       | 10/24/2024           |

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CIE 1931 Chromaticity Diagram



CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



CCT = 2993K  
 CIE x = 0.4406  
 CIE y = 0.4107  
 Duv = 0.0021

Point lies inside the ANSI 3000K 4-step quadrangle

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**Photopic Flux vs. Wavelength**



**Photopic Lumens: NR**

| $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) |
|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|
| 360            | 0                        | NR                   | 490            | 310                      | NR                   | 620            | 998                      | NR                   | 750            | 77                       | NR                   | 880            | 2                        | NR                   |
| 365            | 0                        | NR                   | 495            | 347                      | NR                   | 625            | 993                      | NR                   | 755            | 66                       | NR                   | 885            | 1                        | NR                   |
| 370            | 0                        | NR                   | 500            | 379                      | NR                   | 630            | 983                      | NR                   | 760            | 56                       | NR                   | 890            | 1                        | NR                   |
| 375            | 0                        | NR                   | 505            | 412                      | NR                   | 635            | 960                      | NR                   | 765            | 48                       | NR                   | 895            | 1                        | NR                   |
| 380            | 0                        | NR                   | 510            | 442                      | NR                   | 640            | 930                      | NR                   | 770            | 41                       | NR                   | 900            | 1                        | NR                   |
| 385            | 0                        | NR                   | 515            | 475                      | NR                   | 645            | 889                      | NR                   | 775            | 35                       | NR                   | 905            | 1                        | NR                   |
| 390            | 0                        | NR                   | 520            | 506                      | NR                   | 650            | 846                      | NR                   | 780            | 30                       | NR                   | 910            | 1                        | NR                   |
| 395            | 0                        | NR                   | 525            | 535                      | NR                   | 655            | 794                      | NR                   | 785            | 26                       | NR                   | 915            | 1                        | NR                   |
| 400            | 1                        | NR                   | 530            | 565                      | NR                   | 660            | 740                      | NR                   | 790            | 22                       | NR                   | 920            | 1                        | NR                   |
| 405            | 2                        | NR                   | 535            | 592                      | NR                   | 665            | 684                      | NR                   | 795            | 19                       | NR                   | 925            | 1                        | NR                   |
| 410            | 6                        | NR                   | 540            | 615                      | NR                   | 670            | 624                      | NR                   | 800            | 16                       | NR                   | 930            | 0                        | NR                   |
| 415            | 10                       | NR                   | 545            | 638                      | NR                   | 675            | 567                      | NR                   | 805            | 14                       | NR                   | 935            | 0                        | NR                   |
| 420            | 20                       | NR                   | 550            | 658                      | NR                   | 680            | 513                      | NR                   | 810            | 12                       | NR                   | 940            | 0                        | NR                   |
| 425            | 38                       | NR                   | 555            | 678                      | NR                   | 685            | 459                      | NR                   | 815            | 10                       | NR                   | 945            | 0                        | NR                   |
| 430            | 70                       | NR                   | 560            | 695                      | NR                   | 690            | 412                      | NR                   | 820            | 9                        | NR                   | 950            | 0                        | NR                   |
| 435            | 136                      | NR                   | 565            | 716                      | NR                   | 695            | 363                      | NR                   | 825            | 8                        | NR                   | 955            | 0                        | NR                   |
| 440            | 262                      | NR                   | 570            | 740                      | NR                   | 700            | 320                      | NR                   | 830            | 7                        | NR                   | 960            | 0                        | NR                   |
| 445            | 424                      | NR                   | 575            | 765                      | NR                   | 705            | 281                      | NR                   | 835            | 6                        | NR                   | 965            | 0                        | NR                   |
| 450            | 406                      | NR                   | 580            | 796                      | NR                   | 710            | 245                      | NR                   | 840            | 5                        | NR                   | 970            | 0                        | NR                   |
| 455            | 313                      | NR                   | 585            | 827                      | NR                   | 715            | 215                      | NR                   | 845            | 4                        | NR                   | 975            | 0                        | NR                   |
| 460            | 294                      | NR                   | 590            | 861                      | NR                   | 720            | 188                      | NR                   | 850            | 4                        | NR                   | 980            | 0                        | NR                   |
| 465            | 250                      | NR                   | 595            | 894                      | NR                   | 725            | 162                      | NR                   | 855            | 3                        | NR                   | 985            | 0                        | NR                   |
| 470            | 217                      | NR                   | 600            | 927                      | NR                   | 730            | 140                      | NR                   | 860            | 3                        | NR                   | 990            | 0                        | NR                   |
| 475            | 228                      | NR                   | 605            | 954                      | NR                   | 735            | 121                      | NR                   | 865            | 2                        | NR                   | 995            | 0                        | NR                   |
| 480            | 249                      | NR                   | 610            | 976                      | NR                   | 740            | 104                      | NR                   | 870            | 2                        | NR                   | 1000           | 0                        | NR                   |
| 485            | 276                      | NR                   | 615            | 992                      | NR                   | 745            | 89                       | NR                   | 875            | 2                        | NR                   |                |                          |                      |

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**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: NR**

**S/P: 1.39**

| $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) |
|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|
| 360               | 0                           | NR                      | 490               | 310                         | NR                      | 620               | 998                         | NR                      | 750               | 77                          | NR                      | 880               | 2                           | NR                      |
| 365               | 0                           | NR                      | 495               | 347                         | NR                      | 625               | 993                         | NR                      | 755               | 66                          | NR                      | 885               | 1                           | NR                      |
| 370               | 0                           | NR                      | 500               | 379                         | NR                      | 630               | 983                         | NR                      | 760               | 56                          | NR                      | 890               | 1                           | NR                      |
| 375               | 0                           | NR                      | 505               | 412                         | NR                      | 635               | 960                         | NR                      | 765               | 48                          | NR                      | 895               | 1                           | NR                      |
| 380               | 0                           | NR                      | 510               | 442                         | NR                      | 640               | 930                         | NR                      | 770               | 41                          | NR                      | 900               | 1                           | NR                      |
| 385               | 0                           | NR                      | 515               | 475                         | NR                      | 645               | 889                         | NR                      | 775               | 35                          | NR                      | 905               | 1                           | NR                      |
| 390               | 0                           | NR                      | 520               | 506                         | NR                      | 650               | 846                         | NR                      | 780               | 30                          | NR                      | 910               | 1                           | NR                      |
| 395               | 0                           | NR                      | 525               | 535                         | NR                      | 655               | 794                         | NR                      | 785               | 26                          | NR                      | 915               | 1                           | NR                      |
| 400               | 1                           | NR                      | 530               | 565                         | NR                      | 660               | 740                         | NR                      | 790               | 22                          | NR                      | 920               | 1                           | NR                      |
| 405               | 2                           | NR                      | 535               | 592                         | NR                      | 665               | 684                         | NR                      | 795               | 19                          | NR                      | 925               | 1                           | NR                      |
| 410               | 6                           | NR                      | 540               | 615                         | NR                      | 670               | 624                         | NR                      | 800               | 16                          | NR                      | 930               | 0                           | NR                      |
| 415               | 10                          | NR                      | 545               | 638                         | NR                      | 675               | 567                         | NR                      | 805               | 14                          | NR                      | 935               | 0                           | NR                      |
| 420               | 20                          | NR                      | 550               | 658                         | NR                      | 680               | 513                         | NR                      | 810               | 12                          | NR                      | 940               | 0                           | NR                      |
| 425               | 38                          | NR                      | 555               | 678                         | NR                      | 685               | 459                         | NR                      | 815               | 10                          | NR                      | 945               | 0                           | NR                      |
| 430               | 70                          | NR                      | 560               | 695                         | NR                      | 690               | 412                         | NR                      | 820               | 9                           | NR                      | 950               | 0                           | NR                      |
| 435               | 136                         | NR                      | 565               | 716                         | NR                      | 695               | 363                         | NR                      | 825               | 8                           | NR                      | 955               | 0                           | NR                      |
| 440               | 262                         | NR                      | 570               | 740                         | NR                      | 700               | 320                         | NR                      | 830               | 7                           | NR                      | 960               | 0                           | NR                      |
| 445               | 424                         | NR                      | 575               | 765                         | NR                      | 705               | 281                         | NR                      | 835               | 6                           | NR                      | 965               | 0                           | NR                      |
| 450               | 406                         | NR                      | 580               | 796                         | NR                      | 710               | 245                         | NR                      | 840               | 5                           | NR                      | 970               | 0                           | NR                      |
| 455               | 313                         | NR                      | 585               | 827                         | NR                      | 715               | 215                         | NR                      | 845               | 4                           | NR                      | 975               | 0                           | NR                      |
| 460               | 294                         | NR                      | 590               | 861                         | NR                      | 720               | 188                         | NR                      | 850               | 4                           | NR                      | 980               | 0                           | NR                      |
| 465               | 250                         | NR                      | 595               | 894                         | NR                      | 725               | 162                         | NR                      | 855               | 3                           | NR                      | 985               | 0                           | NR                      |
| 470               | 217                         | NR                      | 600               | 927                         | NR                      | 730               | 140                         | NR                      | 860               | 3                           | NR                      | 990               | 0                           | NR                      |
| 475               | 228                         | NR                      | 605               | 954                         | NR                      | 735               | 121                         | NR                      | 865               | 2                           | NR                      | 995               | 0                           | NR                      |
| 480               | 249                         | NR                      | 610               | 976                         | NR                      | 740               | 104                         | NR                      | 870               | 2                           | NR                      | 1000              | 0                           | NR                      |
| 485               | 276                         | NR                      | 615               | 992                         | NR                      | 745               | 89                          | NR                      | 875               | 2                           | NR                      |                   |                             |                         |

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Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.69

| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 310                      | NR            | 620    | 998                      | NR            | 750    | 77                       | NR            | 880    | 2                        | NR            |
| 365    | 0                        | NR            | 495    | 347                      | NR            | 625    | 993                      | NR            | 755    | 66                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 379                      | NR            | 630    | 983                      | NR            | 760    | 56                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 412                      | NR            | 635    | 960                      | NR            | 765    | 48                       | NR            | 895    | 1                        | NR            |
| 380    | 0                        | NR            | 510    | 442                      | NR            | 640    | 930                      | NR            | 770    | 41                       | NR            | 900    | 1                        | NR            |
| 385    | 0                        | NR            | 515    | 475                      | NR            | 645    | 889                      | NR            | 775    | 35                       | NR            | 905    | 1                        | NR            |
| 390    | 0                        | NR            | 520    | 506                      | NR            | 650    | 846                      | NR            | 780    | 30                       | NR            | 910    | 1                        | NR            |
| 395    | 0                        | NR            | 525    | 535                      | NR            | 655    | 794                      | NR            | 785    | 26                       | NR            | 915    | 1                        | NR            |
| 400    | 1                        | NR            | 530    | 565                      | NR            | 660    | 740                      | NR            | 790    | 22                       | NR            | 920    | 1                        | NR            |
| 405    | 2                        | NR            | 535    | 592                      | NR            | 665    | 684                      | NR            | 795    | 19                       | NR            | 925    | 1                        | NR            |
| 410    | 6                        | NR            | 540    | 615                      | NR            | 670    | 624                      | NR            | 800    | 16                       | NR            | 930    | 0                        | NR            |
| 415    | 10                       | NR            | 545    | 638                      | NR            | 675    | 567                      | NR            | 805    | 14                       | NR            | 935    | 0                        | NR            |
| 420    | 20                       | NR            | 550    | 658                      | NR            | 680    | 513                      | NR            | 810    | 12                       | NR            | 940    | 0                        | NR            |
| 425    | 38                       | NR            | 555    | 678                      | NR            | 685    | 459                      | NR            | 815    | 10                       | NR            | 945    | 0                        | NR            |
| 430    | 70                       | NR            | 560    | 695                      | NR            | 690    | 412                      | NR            | 820    | 9                        | NR            | 950    | 0                        | NR            |
| 435    | 136                      | NR            | 565    | 716                      | NR            | 695    | 363                      | NR            | 825    | 8                        | NR            | 955    | 0                        | NR            |
| 440    | 262                      | NR            | 570    | 740                      | NR            | 700    | 320                      | NR            | 830    | 7                        | NR            | 960    | 0                        | NR            |
| 445    | 424                      | NR            | 575    | 765                      | NR            | 705    | 281                      | NR            | 835    | 6                        | NR            | 965    | 0                        | NR            |
| 450    | 406                      | NR            | 580    | 796                      | NR            | 710    | 245                      | NR            | 840    | 5                        | NR            | 970    | 0                        | NR            |
| 455    | 313                      | NR            | 585    | 827                      | NR            | 715    | 215                      | NR            | 845    | 4                        | NR            | 975    | 0                        | NR            |
| 460    | 294                      | NR            | 590    | 861                      | NR            | 720    | 188                      | NR            | 850    | 4                        | NR            | 980    | 0                        | NR            |
| 465    | 250                      | NR            | 595    | 894                      | NR            | 725    | 162                      | NR            | 855    | 3                        | NR            | 985    | 0                        | NR            |
| 470    | 217                      | NR            | 600    | 927                      | NR            | 730    | 140                      | NR            | 860    | 3                        | NR            | 990    | 0                        | NR            |
| 475    | 228                      | NR            | 605    | 954                      | NR            | 735    | 121                      | NR            | 865    | 2                        | NR            | 995    | 0                        | NR            |
| 480    | 249                      | NR            | 610    | 976                      | NR            | 740    | 104                      | NR            | 870    | 2                        | NR            | 1000   | 0                        | NR            |
| 485    | 276                      | NR            | 615    | 992                      | NR            | 745    | 89                       | NR            | 875    | 2                        | NR            |        |                          |               |

**Summary**

$R_f = 92.6$   
 $R_g = 98.5$   
 $CIE R_a = 92.4$   
 $R_9 = 58.2$



**Color Vector Graphics**



Individual Sample Fidelity Index ( $R_{f,i}$ )

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 94 | CES51 = 98 | CES76 = 90 |
| CES02 = 63 | CES27 = 94 | CES52 = 98 | CES77 = 91 |
| CES03 = 32 | CES28 = 97 | CES53 = 96 | CES78 = 88 |
| CES04 = 70 | CES29 = 95 | CES54 = 95 | CES79 = 94 |
| CES05 = 51 | CES30 = 97 | CES55 = 94 | CES80 = 94 |
| CES06 = 51 | CES31 = 96 | CES56 = 94 | CES81 = 84 |
| CES07 = 43 | CES32 = 91 | CES57 = 94 | CES82 = 97 |
| CES08 = 42 | CES33 = 98 | CES58 = 94 | CES83 = 97 |
| CES09 = 29 | CES34 = 96 | CES59 = 97 | CES84 = 95 |
| CES10 = 76 | CES35 = 97 | CES60 = 95 | CES85 = 85 |
| CES11 = 59 | CES36 = 87 | CES61 = 94 | CES86 = 84 |
| CES12 = 65 | CES37 = 95 | CES62 = 92 | CES87 = 92 |
| CES13 = 44 | CES38 = 93 | CES63 = 93 | CES88 = 95 |
| CES14 = 74 | CES39 = 99 | CES64 = 92 | CES89 = 86 |
| CES15 = 72 | CES40 = 98 | CES65 = 89 | CES90 = 96 |
| CES16 = 48 | CES41 = 98 | CES66 = 90 | CES91 = 82 |
| CES17 = 50 | CES42 = 97 | CES67 = 89 | CES92 = 81 |
| CES18 = 57 | CES43 = 97 | CES68 = 90 | CES93 = 89 |
| CES19 = 72 | CES44 = 99 | CES69 = 92 | CES94 = 80 |
| CES20 = 67 | CES45 = 99 | CES70 = 89 | CES95 = 86 |
| CES21 = 86 | CES46 = 96 | CES71 = 87 | CES96 = 92 |
| CES22 = 79 | CES47 = 95 | CES72 = 95 | CES97 = 96 |
| CES23 = 92 | CES48 = 93 | CES73 = 85 | CES98 = 94 |
| CES24 = 91 | CES49 = 97 | CES74 = 93 | CES99 = 91 |
| CES25 = 72 | CES50 = 98 | CES75 = 88 |            |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)